

small amount of radioactive material is injected by vein. It then concentrates in the gallbladder. An agent is then given that will cause the gallbladder to contract and empty. A diseased gallbladder does not do this very well and so this test can indicate a gallbladder problem. There are other tests available for difficult cases.

Treatment

It is recommended that patients with colic pain avoid large meals and, especially, fatty foods and oils. These may cause colic pain to return. If the patient is overweight, significant weight loss is recommended as a long-term guideline. However, effective treatment usually involves one of the following choices:

1. **Watchful Waiting**—Because many patients with gallstones never develop symptoms, watchful waiting is often indicated. In fact, it is now recommended that most patients without symptoms receive no treatment at all.
2. **Laparoscopic Surgery**—This technique has rapidly become the treatment of choice for many gallstone patients. A tiny incision is made through the navel. A microvideo tube is then inserted through it. Three other needle-like instruments are then inserted through the upper abdomen. These are used to pick up and dissect the gallbladder which, together with the stones, is teased out of the small incision. With this technique, patients usually can go home the same or next day.
3. **General Surgery**—In the past general surgery was the treatment of choice for symptomatic gallstones. Laparoscopic surgery is now possible in most patients. With general surgery there is a 3 to 6 inch incision in the right upper abdomen and a 3 to 6 day hospital stay. There are instances in which this type of surgery is still necessary.

4. **Gallstone Dissolving**—Drugs are now available that dissolve cholesterol gallstones. This treatment, however, is not appropriate for every patient. For example, the gallbladder must be able to concentrate the medicine inside it. In addition, the stones should be free floating and not too large. Complete dissolving of gallstones can take from six months to two years, with maintenance treatment sometimes being required afterward.

Because of the speed and simplicity of laparoscopic surgery, this technique is by far the one most commonly used. The body can function quite well without the gallbladder, although diarrhea at times can be a troublesome problem, especially in patients with irritable or spastic bowel syndrome. Together, the patient and physician can choose the appropriate treatment. For each patient, the physician assesses the gallbladder symptoms, the patient's age, and other medical and non-medical factors.

Summary

Gallstones are a common disorder and often cause no symptoms. They can, however, produce severe pain and serious problems which, when discovered, require a well-developed plan of action. The goal should be to avoid emergency complications and surgery. For symptomatic stones, laparoscopic surgery is most commonly performed, although other forms of treatment are available. By consulting with the physician, the right treatment choice can be made.

SPECIAL INSTRUCTIONS:

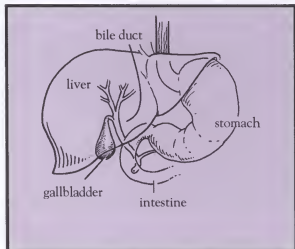
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Gallstones

To understand the nature of gallstones, it is helpful to first look at the anatomy of the gallbladder and bile ducts. The gallbladder is a pear-shaped organ that rests under the liver in the right upper abdomen. The liver produces bile, a yellow liquid needed by the intestine to help digest fat and oils. Ducts, or tubes, carry bile from the liver to the gallbladder and on to the intestine. Bile is stored in the gallbladder, which contracts periodically to force the bile into the intestine.

How Do Gallstones Form?

Bile is composed of a variety of chemicals, including cholesterol, salts, and certain pigments. The gallbladder absorbs water from the bile, causing it to thicken. In some people, tiny crystals form from the cholesterol and pigments. These crystals grow gradually until one or even hundreds of gallstones develop. About 80 percent of gallstones are composed of cholesterol, while the remainder are made of pigments, salts, and other chemicals. The way stones are formed is gradually becoming known to scientists. It is possible that in the future gallstones can be prevented.



Who Develops Gallstones?

It is well known that in the Western World middle-aged, white females are most likely to develop gallstones. However, by age 60, almost 30 percent of all men and women have gallstones. Losing weight very rapidly produces stones in some people. Asian and African people have a low incidence of gallstones, while certain American Indian tribes have almost a 100 percent incidence in females by middle age. Therefore heredity, age, and diet are probably all important factors in developing gallstones. Practically anyone, at any age and under certain conditions, can develop these stones.

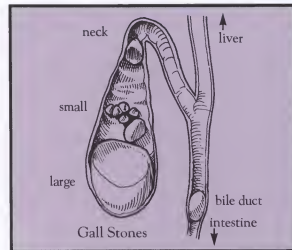
Symptoms

Many patients with gallstones never experience symptoms. However, as many as one-half of all gallstone patients experience one of the following:

Colic—Colic pain occurs after meals when the gallbladder contracts. During this process, gallstones can lodge in the outlet neck of the gallbladder or even in the main bile duct to the intestine. This situation causes intermittent, often severe pain, which is experienced in the upper-middle or right side of the upper abdomen, or even in the right shoulder and, sometimes, under the breast bone. Colic attacks last from a few minutes to several hours.

Gallbladder Inflammation—Occasionally, the stones irritate the gallbladder to such an extent that active and acute inflammation results. This condition produces steady, dull, and usually severe pain in the upper-right abdomen. Often, the abdomen is tender and fever is present. The patient knows there is a problem that needs medical attention.

Yellow Jaundice—When a gallstone becomes permanently lodged in the main bile duct,



the bile flow is blocked and cannot reach the intestine. Bile, therefore, backs up in the liver and spills into the blood. The skin turns yellow, the urine dark and, perhaps, the stool white, since it is bile that colors the stool brown.

Other Symptoms—Gallstones are frequently blamed for causing indigestion, nausea, and intolerance to fatty foods. However, it has been found that persons without gallstones experience these symptoms as frequently as those with stones. Therefore, the physician cannot be certain that gallstones are causing these symptoms.

Diagnosis

The physician, and even the patient, may suspect the presence of gallstones simply from the medical history. A sound wave test (ultrasound or sonography) provides a simple, quick method of diagnosis. In this test, sound waves are beamed into the gallbladder. If hard stones are present the wave is reflected back (echo) to the machine which picks up and documents this echo. This test looks at the anatomy of the gallbladder. Another way of testing is to evaluate the function. In this test (a hepatobiliary scan) a